CLAIMS

1. A moving picture encoding method for performing a multi-frame motion prediction with reference to a plurality of picture frames, comprising:

including, in reference frames used for the multi-frame motion prediction, a frame that has been encoded in a higher picture quality than the other frames of the same picture type.

2. The method according to claim 1, wherein the frame encoded in the higher picture quality is a frame to which more code amount is assigned than the other frames of the same picture type.

3. The method according to claim 1, wherein the frame encoded in the higher picture quality is a frame having a smaller quantizing parameter than the other frames of the same picture type.

4. The method according to claim 1, wherein the frame encoded in the higher picture quality is a P-picture frame.

5. The method according to claim 1, wherein the frame encoded in the higher picture quality is a B-picture frame.

6. The method according to claim 5, further comprising a step of:

when a plurality of continuous B-picture frames is encoded, in comparison with a final B-picture frame in said continuous B-picture frames, encoding B-picture frames prior to said final B-picture frame in a higher picture

quality.

7. The method according to claim 1, further comprising a step of:

arranging the frames encoded in the higher picture quality at constant frame intervals.

8. The method according to claim 6, further comprising a step of:

arranging the frames encoded in the higher picture quality at constant frame intervals.

9. The method according to claim 1, further comprising a step of:

adaptively changing a frame interval of the frames encoded in the higher picture quality in accordance with differential information and motion information between a reference frame and a subject frame to be encoded.

10. The method according to claim 6, further comprising a step of:

adaptively changing a frame interval of the frames encoded in the higher picture quality in accordance with differential information and motion information between a reference frame and a subject frame to be encoded.

11. A moving picture encoding apparatus for performing a multi-frame motion prediction with reference to a plurality of picture frames, comprising:

selection means for selecting at least one reference frame from a plurality of reference frames of the same picture type; and

encoding means for encoding the selected reference frame in a higher picture quality than the other reference frames of the same picture type.

12. The apparatus according to claim 11, wherein said encoding means assigns more code amount to the selected reference frame than the other reference frames of the same picture type.

13. The apparatus according to claim 11, wherein said encoding means sets a smaller quantizing parameter for the selected reference frame than the other reference frames of the same picture type.

14. The apparatus according to claim 11, wherein said selected reference frame is a P-picture frame.

15. The apparatus according to claim 11, wherein said selected reference frame is a B-picture frame.

16. The apparatus according to claim 15, wherein said selection means, from a plurality of continuous B-picture frames, selects a B-picture frame prior to a final B-picture frame in said continuous B-picture frames.

17. The apparatus according to claim 11, wherein said selection means selects said reference frame at constant frame intervals.

18. The apparatus according to claim 16, wherein said selection means selects said reference frame at constant frame intervals.

19. The apparatus according to claim 11, further comprising:

moving picture analysis means for outputting differential information

and motion information between a reference frame and a subject frame to be encoded,

wherein said selection means selects said reference frame in a manner that frame intervals of reference frames to be selected are adaptively changed in accordance with said differential information and said motion information.

20. The apparatus according to claim 16, further comprising:

moving picture analysis means for outputting differential information and motion information between a reference frame and a subject frame to be encoded:

wherein said selection means selects said reference frame in a manner that frame intervals of reference frames to be selected are adaptively changed in accordance with said differential information and said motion information.

21. An input/output apparatus to/from which moving picture data encoded by performing a multi-frame motion prediction with reference to a plurality of picture frames is input or output:

wherein said encoded moving picture data includes a frame encoded in a higher picture quality than the other frames of the same picture type in reference frames used for the multi-frame motion prediction.

22. An input/output apparatus to/from which moving picture data encoded by performing a multi-frame motion prediction with reference to a plurality of picture frames is input and output, comprising:

a video decoder for decoding said encoded moving picture data; and

monitor means for monitoring a picture type, a reference frame, a

quantizing parameter, a variable length code, and a frame memory, supplied from said video decoder 1 and for determining whether or not said encoded moving picture data includes a reference frame that is used for the multi-frame prediction and that is encoded in the higher picture quality than the other frames of the same picture type.

23. A program for making a computer that executes moving picture encoding by performing a multi-frame motion prediction with reference to a plurality of picture frames, execute processes of:

selecting at least one reference frame from a plurality of reference frames of the same picture type; and

encoding the selected reference frame in a higher picture quality than the other reference frames of the same picture type.

24. A program for making a computer that executes moving picture encoding by performing a multi-frame motion prediction with reference to a plurality of picture frames, execute processes of:

obtaining differential information and motion information between a reference frame and a subject frame to be encoded;

selecting at least one reference frame from a plurality of reference frames of the same picture type in a manner that intervals of reference frames to be selected are adaptively changed, in accordance with said differential information and said motion information; and

encoding the selected reference frame in a higher picture quality than the other reference frames of the same picture type.

25. A computer readable storage medium stored with a program for making a computer that executes moving picture encoding by performing a multi-frame motion prediction with reference to a plurality of picture frames, execute processes of:

selecting at least one reference frame from a plurality of reference frames of the same picture type; and

encoding the selected reference frame in a higher picture quality than the other reference frames of the same picture type.

26. A computer readable storage medium stored with a program for making a computer that executes moving picture encoding by performing a multi-frame motion prediction with reference to a plurality of picture frames, execute processes of:

obtaining differential information and motion information between a reference frame and a subject frame to be encoded;

selecting at least one reference frame from a plurality of reference frames of the same picture type in a manner that intervals of reference frames to be selected are adaptively selected, in accordance with said differential information and said motion information; and

encoding the selected reference frame in a higher picture quality than the other reference frames of the same picture type.